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AUTHOR Major, Roy C.
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ABSTRACT

A study investigated variations in five native Japanese-speakers' consonant patterns in English as a Second Language. The eight phonological segments considered were English consonant clusters and final consonants. Subjects listened to a recording of a text by a native English-speaker and then read the text aloud five times. A similar procedure was followed for a word list. Subsequently, an informal conversation between the subject and researcher was recorded. Error patterns were analyzed, making a distinction between errors due to interference and errors due to developmental factors. Systematic patterns of variation were found in the segments studied, conforming to predictions on order of acquisition based on native language transfer and universal grammar theory. Both positive and negative transfer were evident. It is concluded that in second language acquisition there is a systematic relationship between variability, language style, and transfer and developmental factors. It is further suggested that while variability is a function of style, the amount of variability may depend on the speaker's proficiency. In general, accuracy increased with formality, with both transfer and developmental processes affecting devoicing significantly. Eight figures and a bibliography are included. (MSE)

Variation in Second Language Phonology

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Roy C. Major

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VARIATION IN SECOND LANGUAGE PHONOLOGY

Roy C. Major
Washington State University

Systematic study of second language variation has begun only recently, although investigation of variation in native speakers has a much longer history (cf. Labov, 1963, 1969). With the increase in current work in L2 acquisition, it is now becoming apparent that variation in native and nonnative speakers share a number of characteristics. A well-documented pattern found in N[ative]S[peaker]s is that the number of prestigious forms increases as formality increases. In a similar fashion, most studies of non-NS variation have found that greater accuracy occurs in the T[arget]L[anguage] as formality increases; e.g., TL accuracy is generally greater when reading a word list than in free conversation (Gatbonton, 1975; Dickerson & Dickerson, 1977; Sato, 1985). Since the prestigious forms for the NS are to some extent equivalent to TL forms for the non-NS, the patterns are similar for NSs and non-NSs. However, one important difference between NSs and non-NSs is that non-NS competence is mediated by stylistically conditioned N[ative]L[anguage] processes which, when transferred to the TL, may either aid or hinder performance. As formality decreases, an English speaker shows an increasing tendency toward vowel reduction and deletion; if transferred to Spanish the speaker will show a decrease in native-like accuracy as formality increases. In contrast, the accuracy of a Brazilian Portuguese speaker's production of English view may increase as formality decreases due to a syllabicity shift, which is favored in casual speech ([viw] --> [vyu], Major, 1985).

A number of current L2 researchers have been strongly influenced by the work of sociolinguists, particularly Labov. Krashen (1978) acknowledges that the Monitor in his Monitor Model, is borrowed from Labov (1970). Although Krashen claims that the Monitor has to be either on or off (one either monitors one's speech or does not), Beebe (1980) suggests that it operates on a sliding scale, as does Tarone (1983). For Beebe, Tarone, and most others style is defined as the amount of attention given to speech (after Labov 1969), i.e. how much the Monitor is employed. Tarone (1983) further argues that one of Labov's axioms (1969) also characterizes L2 acquisition: Whereas, the most systematic patterns occur in the vernacular, other styles show more variability. This claim seems dubious when applied to L2 acquisition. To cite one study, Dickerson & Dickerson (1977) showed Japanese learners of English produced English /r/ only 50% accurately in conversation but nearly 100% accurately in word lists. This means there was more variation in conversation than in word lists, opposite to what Tarone claims. If Labov's claim is true for style shifting in NSs, then the example from the Dickersons demonstrates there are

significant differences between style shifting in NSs and non-NSs.

There are, however, important similarities which become apparent when one considers what it means to be a NS. The NS/non-NS classification may be better represented as a continuum rather than a categorical distinction. At the opposite ends of the continuum the NS/non-NS distinction is clear: The language used since birth at home with peers and family is the NL; a fleeting knowledge with another language first learned at age 20 is clearly a non-NL. But consider a five-year-old who learns a second language in school and (1) uses L2 with peers at school, while gradually increasing L2 use at home and eventually ceasing to use L1, (2) uses L2 with peers at school, while continuing to use L1 at home, or (3) uses L1 with some peers but L2 with others, and L1 at home. In which of these cases is L2 a NL? A categorical distinction between a NS and non-NS is difficult; degree of nativeness is more realistic: L2 is more native for situation (1) than for (2), and L2 is more native in (2) than in (3).

One area of L2 research which has not been generally utilized in sociolinguistic research on NSs is the distinction between errors or deviations from the target which are due to NL influence and deviations which are not due to NL influence (Johansson, 1973; Tarone, 1978, 1980; Macken and Ferguson, 1981; Wode, 1981; Hecht and Mulford, 1982; Major, 1987a). The former are transfer or interference errors (a French speaker using uvular [R] for English /r/); the latter are developmental errors (an English speaker producing some non-English/non-Xhosa click when attempting Xhosa). These developmental errors are interesting in terms of language universals and language change because they reflect universal mechanisms common to L1 and L2 acquisition and dialects in contact. One type of developmental error common in L1 and L2 acquisition and dialect contact is hypercorrection or overcompensation. Examples are legion in L1 acquisition; in L2 acquisition ESL teachers note that many students who are successful with English /r/ (after initial failure) seem to be so proud of their /r/s, producing such a strong variety, that they r you to death with their hyperarticulated r-full dialects (reminiscent of a stereotype cowboy accent). In dialect contact hypercorrection has been frequently documented: in Martha's Vineyard (Labov, 1963), in the raising of /ɛ/ and /ɔ/ in New York City (Trudgill, 1983), and other hyperdialectalisms (Trudgill, 1986).

Because of the similarity between L2 acquisition and dialect/stylistic shifts in NSs, it would seem fruitful to examine the transfer/developmental distinction in all these contexts. Some of Trudgill's latest work on interdialects (e.g. 1986) might be reexamined within this framework. For example, how does length and degree of contact relate to the frequency of transfer or developmental substitutions, and how are these

correlated with stylistic shifts? A similar question for L2 learners can be posed: How does the frequency of these two types of substitutions pattern chronologically and according to style? If sociolinguists begin to investigate phenomena in dialect/language contact situations, including pidgins and creoles, from the perspective of transfer/developmental distinctions, while others continue investigating transfer/developmental phenomena in L2 acquisition, we may hope to gain some new insights into universals of language acquisition.

The present study continues this line of research in L2 acquisition. It investigates the patterns of transfer and developmental errors according to style in Japanese learners of English.

METHODS

Five native speakers of Japanese were selected as subjects. They were at an intermediate level of English proficiency (TOEFL scores 400-450) and had been living in the U.S. from two to four months. The speech sample includes three different styles: reading a word list, reading a text, and a short conversation. The phenomena investigated include English consonant clusters and final consonants (eight different patterns). To control for phonological environment, the key words in the Word List and the Text were the same. The conversation did not attempt to elicit specific phenomena but rather was an informal chat with each subject.

The recording procedure was as follows: The subject listened to a recording of the Text by a native speaker of American English; then the subject read the Text five times. A similar procedure was followed for the Word List. Subsequently, a recording was made of a 20-30 minute conversation between the author and each subject. The total number of tokens for the five subjects for each of the eight phenomena averaged 172 for the Word and Text and 105 for the Conversation (for a more complete discussion of this study, see Major, 1987b).

The phenomena were transcribed and classified as (1) C = correct, (2) T = error due to transfer, e.g. vowel insertions, Japanese liquid for English liquids, or (3) D = error due to developmental factors, e.g. word-final obstruent devoicing, substitution of [w] for /r/. These variables were tested for significance using analysis of variance.

RESULTS AND DISCUSSION

Figures 1-8 show the averages for the five subjects. Analyses of variance tested whether changes according to style were significant and whether the shapes of the curves differed significantly. Only 11 out of 32 analyses were significant at $p < 0.05$. In spite of this, and in fact because for many

phenomena there were no significant changes as style varied, the patterns reveal some important characteristics of L2 acquisition.

Word-Initial Fricative plus Stop

Given that Japanese has no underlying consonant clusters (except geminates), it is at first surprising that the subjects had so little difficulty with #S-F clusters (Figure 1). However, a plausible reason for the lack of difficulty is because there are surface clusters in Japanese, derived from devoicing and deleting /i/ and /u/ between voiceless obstruents, e.g. /sukiaki/ --> [sukiaki] --> [skiaki] sukiyaki. If this process is transferred into English, a correct surface pronunciation of English clusters results, via insertion, devoicing, and deletion: spy: /spay/ --> [supay] --> [supay] --> [spay]. On the one hand, this process can produce correct #S-F sequences but on the other hand, it can produce incorrect consonant clusters: [sti] for city is commonly heard by ESL teachers with Japanese students.

Word-Initial Obstruent plus Liquid

As formality increases, there is a slight increase in correct production (Figure 2); this is consistent with most other studies (Gatbonton, 1975; Dickerson and Dickerson, 1977; Sato, 1985). Most errors are due to transfer, e.g. the use of the Japanese flap for English liquids.

Word-Final Stop

When the final stop is voiceless (Figure 3), there is little difficulty. Although Japanese has no underlying final obstruents, they can occur on the surface due to devoicing and deletion of a final vowel. Transferring the process to English would thus produce the correct surface form: hope: /hop/ --> [hopu] --> [hopu] --> [hop]. Although this process is plausible, it may not be the only reason for the success. Rather, the speakers may have mastered final voiceless stops simply because these sounds are much less marked than final voiced stops. With reference to L2 acquisition, this point has been elucidated by Eckman (1977, 1985).

Final voiced stops present considerably more difficulty than voiceless stops (Figure 4). This pattern is consistent with Eckman's claim that in L2 acquisition final voiceless obstruents are acquired before the voiced counterparts. However, the widespread observation that the greatest accuracy occurs in word lists is not supported here. Although correct production increases slightly from the Conversation to the Text, it decreases in the Word List. This is because of an increase in

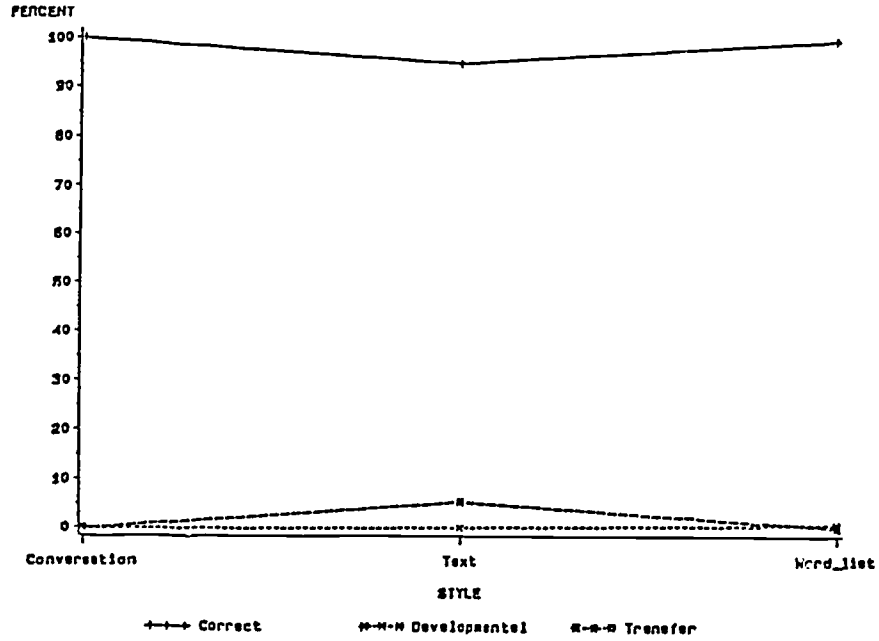

Figure 1. #F-S (word initial fricative plus stop)

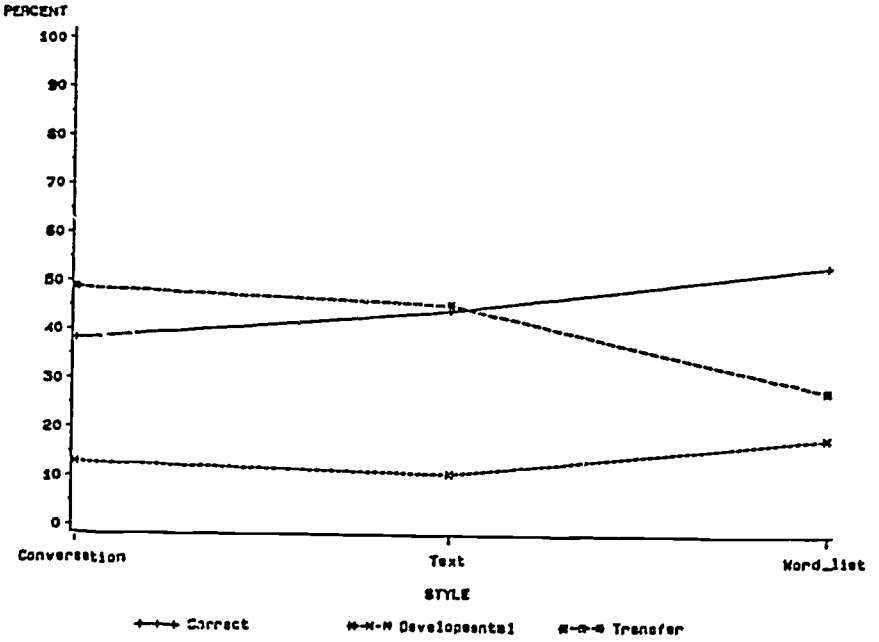

Figure 2 #0-L (word initial obstruent plus liquid)

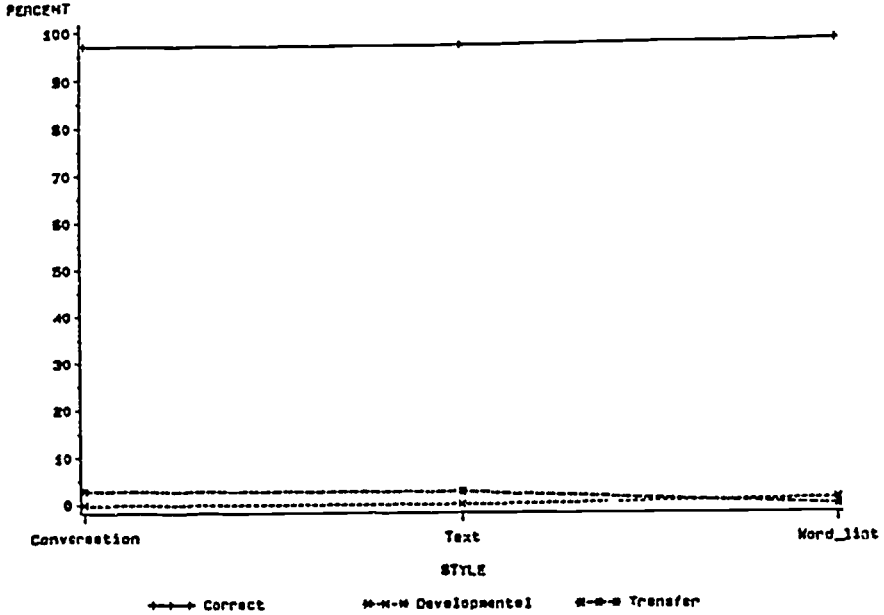

Figure 3 S# (word final voiceless stop)
[-voi]

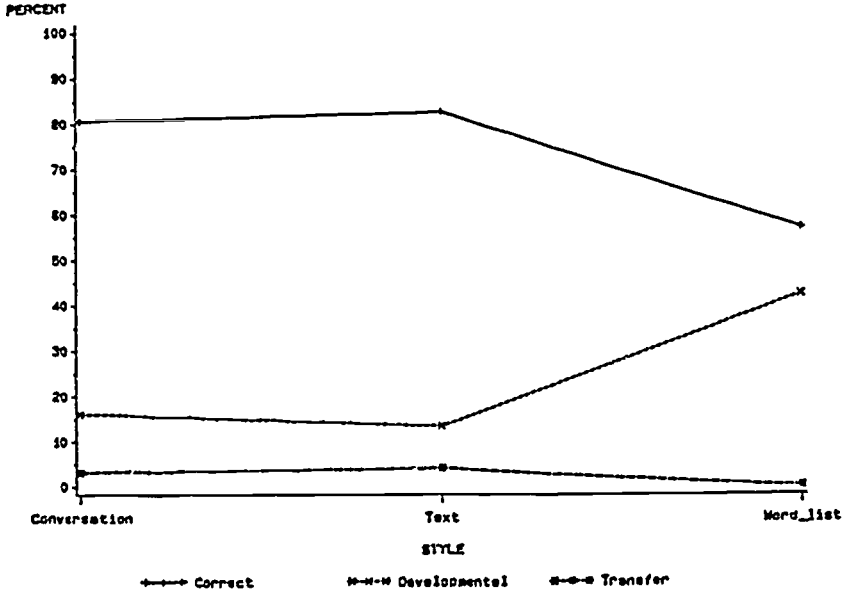

Figure 4 #S (word final voiced stop)
[+voi]

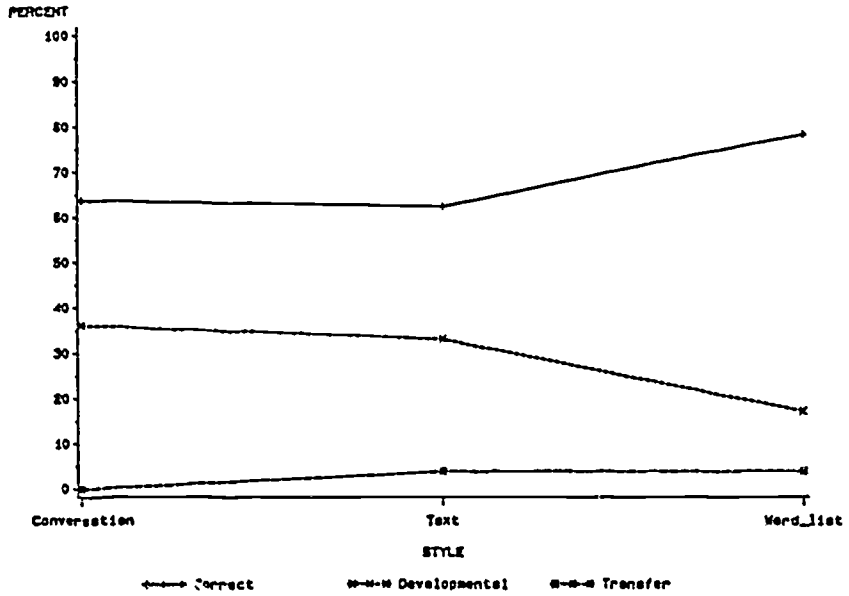

Figure 5 L-S# (word final liquid plus voiceless stop) [-voi].

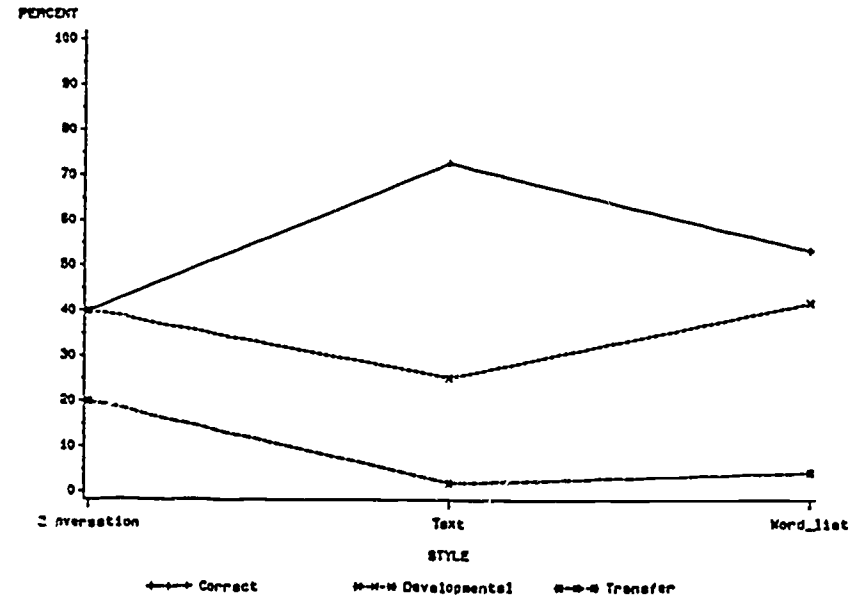

Figure 6 L-S# (word final liquid plus voiced stop) [+voi]

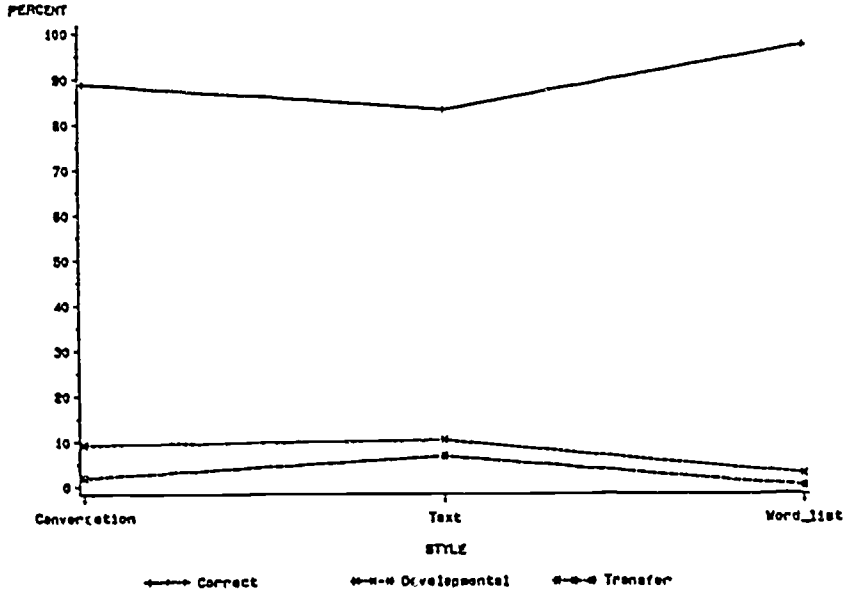

Figure 7 0-0# (final voiceless obstruent clusters)
[-voi] [-voi]

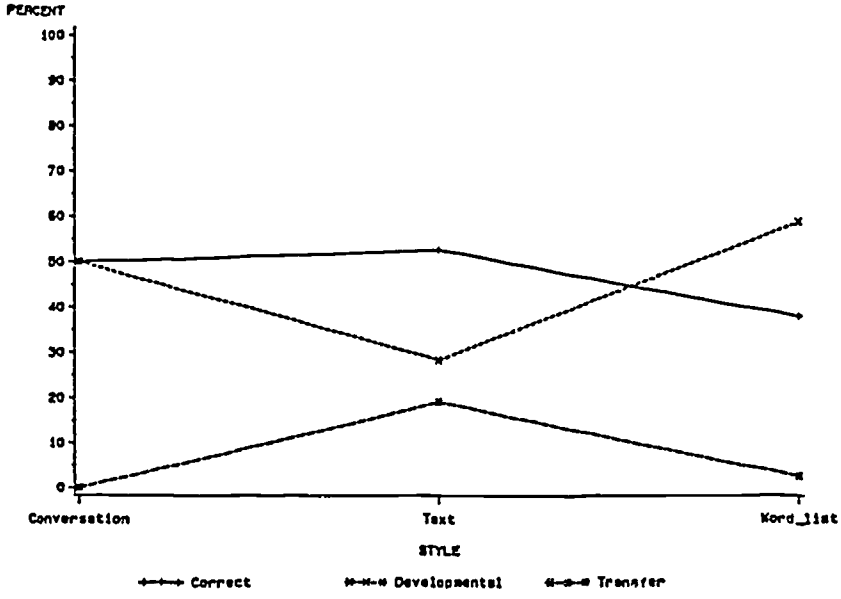

Figure 8 0-0# (final voiced obstruent clusters)
[+voi] [+voi]

developmental errors, by far the most common being devoicing. Since universally final devoicing is favored before a pause, this could account for the prevalence of devoicing in the Word List because items in the Word List functioned as complete utterances (subjects left 1-2 second pauses between each item). Although pauses occurred in other styles, the length and frequency tended to depend on rate and fluency. Devoicing is also favored before another voiceless obstruent, but the proportion of voiceless obstruents in this environment was small for the Text and Conversation (a more detailed analysis could extract these various environments).

As a word of caution, the determination of final obstruents as voiced or voiceless was based on auditory perception, not instrumental analysis. Since in English a vowel is considerably longer before a final voiced obstruent than before a voiceless one, it possible if the Japanese learners made all vowels short then the final obstruents were perceived as voiceless, regardless of whether they were physically voiceless. However, since many of the devoiced obstruents were strongly aspirated, it is unlikely that they were actually voiced. Nevertheless, as a follow up, spectrographic analysis could be introduced for more objectivity.

Word-Final Liquid plus Stop

When the final stop is voiceless, correct production is favored in the Word List over the Conversation and Text (Figure 5). The pattern is similar to Figure 2, which also shows an increase in correct productions for the Word List and a decrease in developmental errors. In contrast to Figure 5, for liquid plus final voiced stops (Figure 6) there is a decrease in correct production for the Word List. This is mostly due to the developmental process of devoicing, already discussed (final voiced stops, Figure 4). In fact, this process overrides most other processes for obstruents in final position, regardless of whether they occur in clusters or not. The importance of the process is evident in the similarity of Figures 4, 6, and 8.

An interesting developmental process occasionally occurring was metathesis:[brub] bulb. However, the forms which on the surface appear to be derived from metathesis may in fact be derived from vowel insertion and deletion: bulb: /bʌlb/ --> [bʌrub] --> [brub] (cf. [sti] city). At present I have no evidence to suggest that one account is more plausible than the other.

Word-Final Obstruent Clusters

Accuracy was high is all three styles for voiceless clusters, especially in the most formal style (Figure 7), although the subjects were not as successful as with single

final voiceless consonants (Figure 3). These patterns follow from markedness considerations: Clusters are universally less frequent and in L1 acquisition are acquired later than single final obstruents. A possible derivation of correct final obstruent clusters is based on Japanese transfer. Even though Japanese has no underlying final clusters, surface clusters can occur due to devoicing of a final vowel and deletion: pats: /pæts/ --> [pætsu] --> [pætsu̥] --> [pæts] (note: /pæts/--> *[pætusu], since /t/ --> [ts]/___[u]).

The lesser success with final voiced clusters (Figure 8) compared to voiceless clusters (Figure 7) and single final obstruents (Figures 3 and 4) was also expected, again based on markedness: Final voiced obstruents are more marked than voiceless obstruents and clusters are more marked than single final obstruents. As with a single final voiced stops (Figure 4), here too terminal devoicing is frequent, especially in the Word List: cabs [kæps]. This pronunciation is probably the result of simple devoicing. The other possible derivation, insertion, iterative devoicing, and deletion (/kæbz/ --> [kæbuzu] --> [kæbuzu̥]--> [kæbuzu̥] --> [kæbuzu̥] -->[kæbuzu̥] -->[kæps], cf. pats above), is not plausible because devoicing of a final vowel in Japanese does not normally occur after a voiced obstruent.

Transfer, Universals, and Order of Acquisition

In addition to revealing systematic patterns of variation, the data in this study conform to predictions on order of acquisition, predictions which are based on NL transfer and U[niversal]G[rammar] in general (Greenberg, 1966, 1978), and in L2 acquisition (Eckman, 1977, 1985). Both positive and negative transfer are evident. Negative transfer correctly predicted greater difficulty with obstruent clusters with liquids than clusters without liquids, since the Japanese liquid is quite different from English liquids (Figures 1, 2, 5, 6, 7, 8). On the other hand, positive transfer of Japanese vowel devoicing and deletion between voiceless obstruents predicted the high success rate with voiceless obstruent clusters in English. UG considerations are also evident. In positions involving final obstruents, single obstruents were acquired before clusters (Figures 3 vs.7, 4 vs. 8), and voiceless obstruents were acquired before voiced obstruents (Figures 3 vs. 4, 5 vs. 6, 7 vs. 8). These patterns follow directly from universal markedness considerations: Word-final single obstruents are more common than clusters and are acquired first; word-final voiceless obstruents are more frequent than voiced obstruents and in L1 acquisition are acquired first.

CONCLUDING REMARKS

This study suggests that in L2 acquisition there is a systematic relationship between variability, style, and transfer and developmental factors. The data also indicate that confining a study to one style gives a limited view because a process can be dormant or suppressed in one style but fully awake in another (e.g. devoicing in the Word List). The results demonstrate that variability is a function of style but the amount of variability may be greater or lesser as formality increases because it also depends on proficiency (e.g. Figure 4 vs. Figure 5). Therefore, this study is counterevidence to Tarone's (1983) claim that the vernacular shows the greatest systematicity.

In general, except for final voiced obstruents, accuracy increases with formality, and the order of acquisition is consistent with predictions based on NL transfer and UG (reflected in developmental processes). Both transfer and developmental processes are important as they apply to devoicing: The transfer process of vowel devoicing and deletion accounts for the success of voiceless obstruent clusters; the developmental process of word-final obstruent devoicing accounts for the errors of final voiced obstruents.

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